

# **2004 DOE Hydrogen, Fuel Cells & Infrastructure Technologies Program Review: Baseline Knowledge Assessment**

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May 27, 2004**

*This presentation does not contain any proprietary or confidential information.*

# Objectives

- **To measure the current level of awareness and understanding of hydrogen and fuel cell technologies and the hydrogen economy in four target populations:**
  - General public
  - Students and educators
  - State and local government agencies
  - Potential large-scale users
- **To establish a baseline for comparison of future evaluations of public awareness, knowledge, and opinion**

# Relevance to Overall DOE Objectives

- **“Develop an education campaign that communicates the benefits of alternative forms of energy, including hydrogen and fusion.” (National Energy Policy, May 2001)**
- **“There are two paths we need to follow: research and development and public outreach.” (David Garman, April 2002)**
- **“Educating consumers, industry leaders, and public policy makers about the benefits of hydrogen is critical to achieving the vision.” (National Hydrogen Energy Roadmap, November 2002, p. 35)**
- **“It’s important that we share an understanding of how hydrogen fuel cell technology works, as well as challenges we face in realizing the vision.” (Spencer Abraham, February 2004)**

# Budget

- **Total funding is \$270,000 in FY04**

# Project Safety

- **There are no technical hazards related to equipment, operations, or processes for the Baseline Knowledge Assessment**
- **An awareness and understanding of hydrogen and fuel cell safety, however, is an integral part of the education program**
- **The surveys will assess the safety consciousness of the target populations**

# Technical Barriers and Targets

- **DOE Technical Barriers to the Education Program**
  - A. Lack of Awareness
  - C. Institutional Barriers and Access to Audiences
  - D. Regional Differences
- **DOE Technical Target for the Education Program**
  - Assess Public Perceptions and Understanding of the Hydrogen Economy and Fuel Cell Technologies

# Approach

- **Review existing literature on hydrogen or fuel cell knowledge and attitudes**
- **Design survey instruments that are targeted to specific populations**
- **Obtain approval from the Office of Management and Budget (OMB) to conduct the surveys**
- **Conduct surveys and analyze data to establish a baseline of knowledge and opinions for each target population**
- **Publish Baseline Knowledge Assessment report**

# Project Timeline

FY03	FY04				
1	2	3	4	5	

FY03: *Planning, searching, initiating, drafting*

FY04: *Prepare OMB materials (as required by Paperwork Reduction Act) and obtain OMB approval for surveys; develop survey instruments; conduct surveys of target audiences; analyze survey results; document survey and non-survey metrics*



# Technical Accomplishments/Progress

1

- **Completed literature review (published Oct 2003)**
  - There have been no statistically designed, random surveys in the United States to determine a baseline knowledge about the hydrogen economy
  - There is no systematic collection of metrics to assess baseline interest in the hydrogen economy

# **Technical Accomplishments/Progress**

**2**

- **Published 60-day and 30-day Federal Register Notices concerning surveys (Aug 2003; Jan 2004)**
- **Obtained OMB approval to conduct public survey (Mar 2004)**
- **Drafted data collection, quality assurance, and analysis plan (Mar 2004)**
- **Completed survey instruments for public, student and educator, state and local government, and large-scale user populations (Mar 2004)**

# **Technical Accomplishments/Progress**

**3A**

- **Conduct surveys (2004)**
  - **General public: 1,000 adults**
  - **Students: 1,000; educators: 100-150**
  - **State and local agencies: about 100**
  - **Large-scale users: about 50**

# Technical Accomplishments/Progress

3B

- Responses to questions that assess knowledge levels will guide the emphasis of the education program and help determine the program's starting level
- Responses to questions that evaluate attitudes will influence how to present the education program and how to prioritize activities
- Responses to questions about experience levels could impact the delivery of special programs (e.g., high-school teacher enrichment courses)

# Technical Accomplishments/Progress

3C

- **Ensure technical defensibility**
  - Sampling must be representative
  - Estimates computed from survey results must be unbiased and qualified in terms of statistical variability
  - All methods must be repeatable in future surveys

# **Technical Accomplishments/Progress**

**4A**

- **Analyze results of surveys (adjust for sampling weights)**
  - **Estimate proportions of each target population responding to the various questions in various ways (to establish a baseline)**
  - **For each target population, identify subject areas where hydrogen knowledge is lacking; assess attitudes toward safety; characterize opinions; and evaluate experience levels**

# **Technical Accomplishments/Progress**

**4B**

- **Analyze results of surveys, continued**
  - **Use cross-tab analyses to explore data generally (investigate relationships between responses and age, gender, geographic region, and race, when appropriate)**
  - **Identify barriers that prevent target audiences from receiving instruction or becoming informed**
  - **Identify the avenues by which different target populations are most likely to obtain information**

# **Technical Accomplishments/Progress**

**5**

- **Collect non-survey metrics for target populations (on-going)**
- **Produce report that documents results of survey and non-survey metrics (projected completion date Sept 2004)**



# Interactions and Collaborations

- **During literature review, contacted various national and international organizations to obtain clarifications and additional data**

# Future Work

- **Document programs, methods, and data to facilitate repeating the surveys in 2007 and comparing results with 2004 baseline**
- **Archive 2004 survey data, programs, and documents**
- **Continue collecting non-survey metrics**
- **Repeat surveys in 2007 and again in 2010**